POLLUTION PREVENTION NPR

Marching Orders:

1) "Requirements, not guidance"
2) "Not a repeat of existing requirements"
3) It shall include **"acquisition"** – because "it's the right thing to do in the long term for NASA"
4) Use the word "shall"

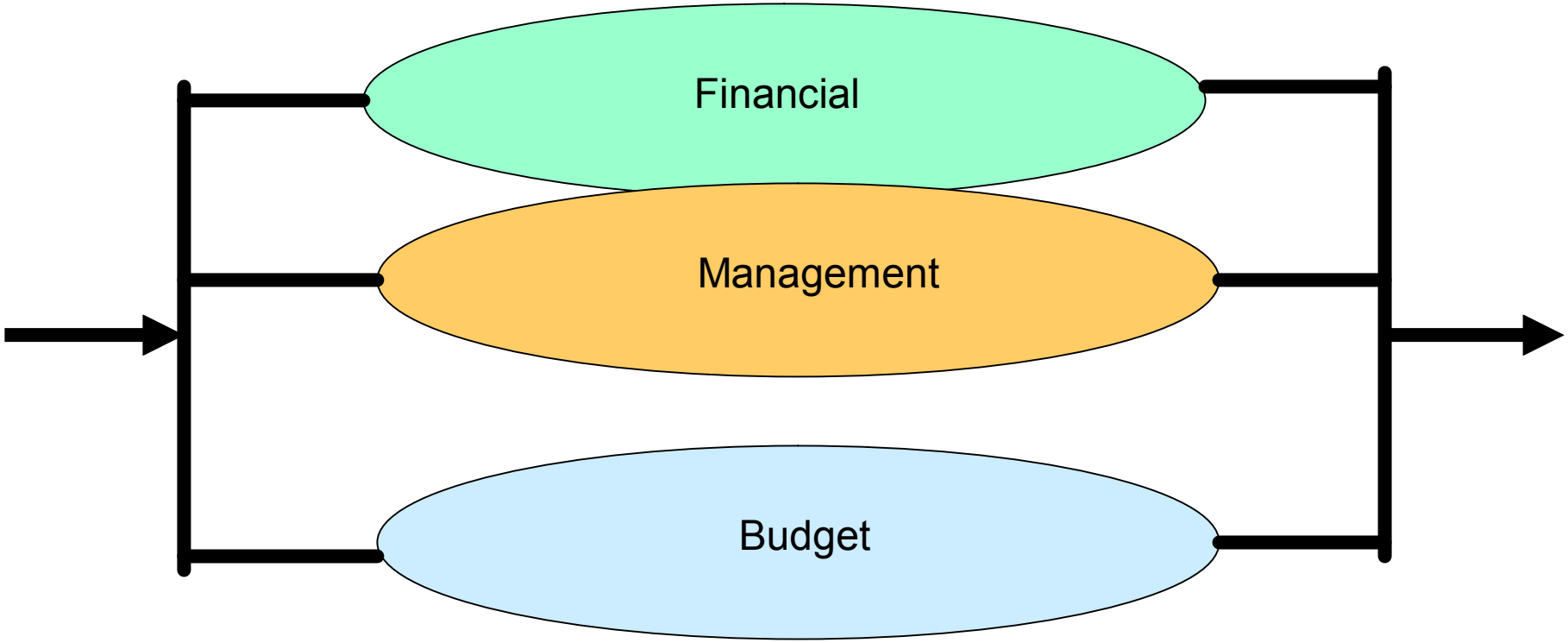
Personal View:

1) Incorporates **"Plan-Do-Check-Act"** process that support EMS
2) Incorporates the concept of **"sustainability"**
3) Incorporates an **"outside the fence line"** perspective
4) Gap analysis of "acquisition" requirements: NASA needs to address:
   (a) capital assets (major systems),
   (b) service contracts,
   (c) required deliverables related to P2.

Pollution Prevention NPR

Sources of Specific Requirements

1) General Requirements
2) Federal Policies
3) “Old” Best Practices



Financial

1. External to Govt

AICPA, SEC

2. Internal to Govt

FASAB, GAAP, GAO reports

3. Within NASA

IG reports, FMMs

Management

1. External to Govt

Benchmark, Best Practices

2. Internal to Govt

Laws, CFRs, EOs, OMB Circ, FAR, Benchmark, Best Practices

3. Within NASA

NPD, NPR, NFS, PICs

Budget

1. External to Govt

2. Internal to Govt

OMB Circ.

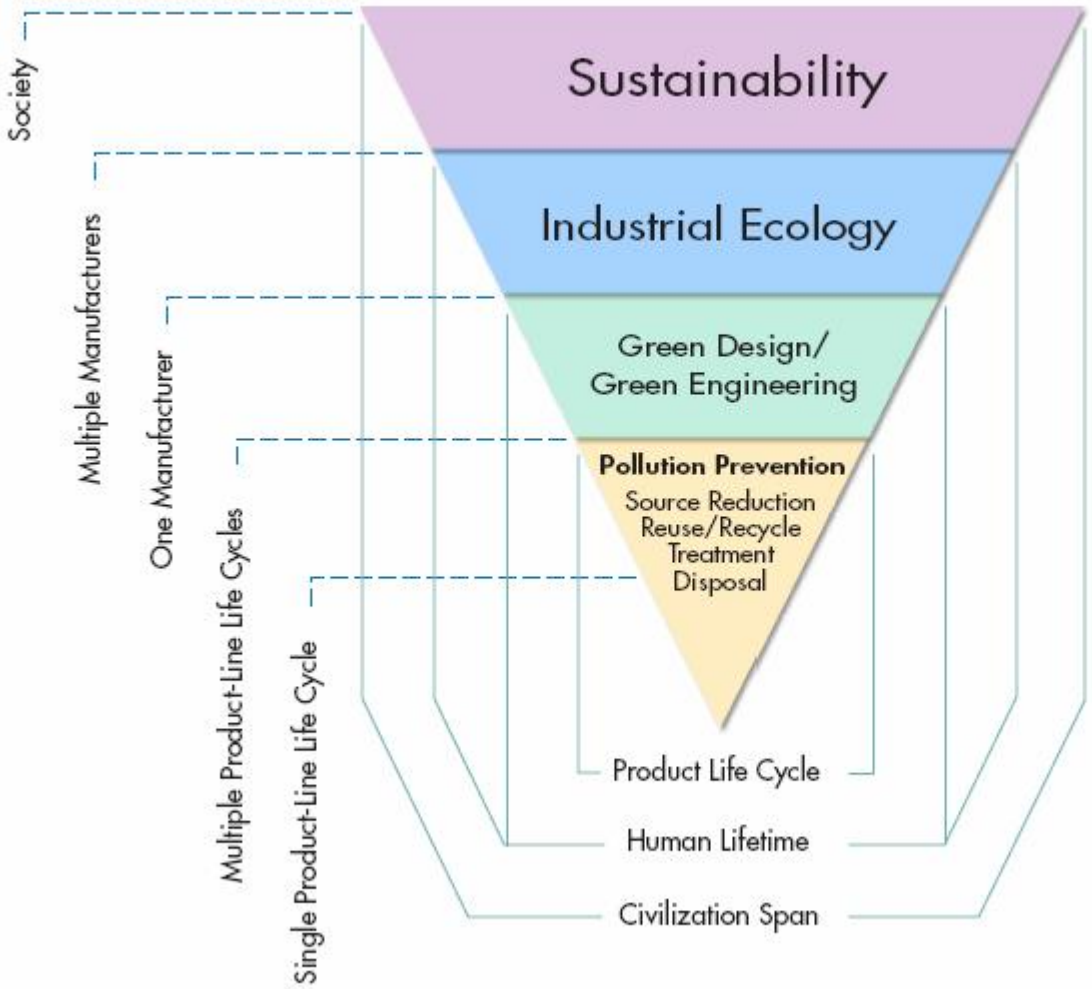
3. Within NASA

POLLUTION PREVENTION NPR

The Goals of the Pollution Prevention NPR are to:

- Meet mission requirements,
- Strengthen NASA operations,
- Minimize impacts and total ownership costs,
- Enhance well-being,
- Drive innovation, and
- Foster a sustainability ethic.

Environmental and Organizational Scales of Environmental Impact Reduction Approaches



Modified from Coulter, Bras et al. 1995.

Sustainability: ***Optimizes*** the following three items ***simultaneously***:

1) Renewable over non-renewable resources,
2) Ecosystem health, ***and***
3) Human welfare.

Traditionally Pollution Prevention: ***Minimizes*** one ***or*** more of the following:

1) Non-renewable resources, ***or***
2) Environmental impact, ***or***
3) Safety & health hazards.

POLLUTION PREVENTION NPR

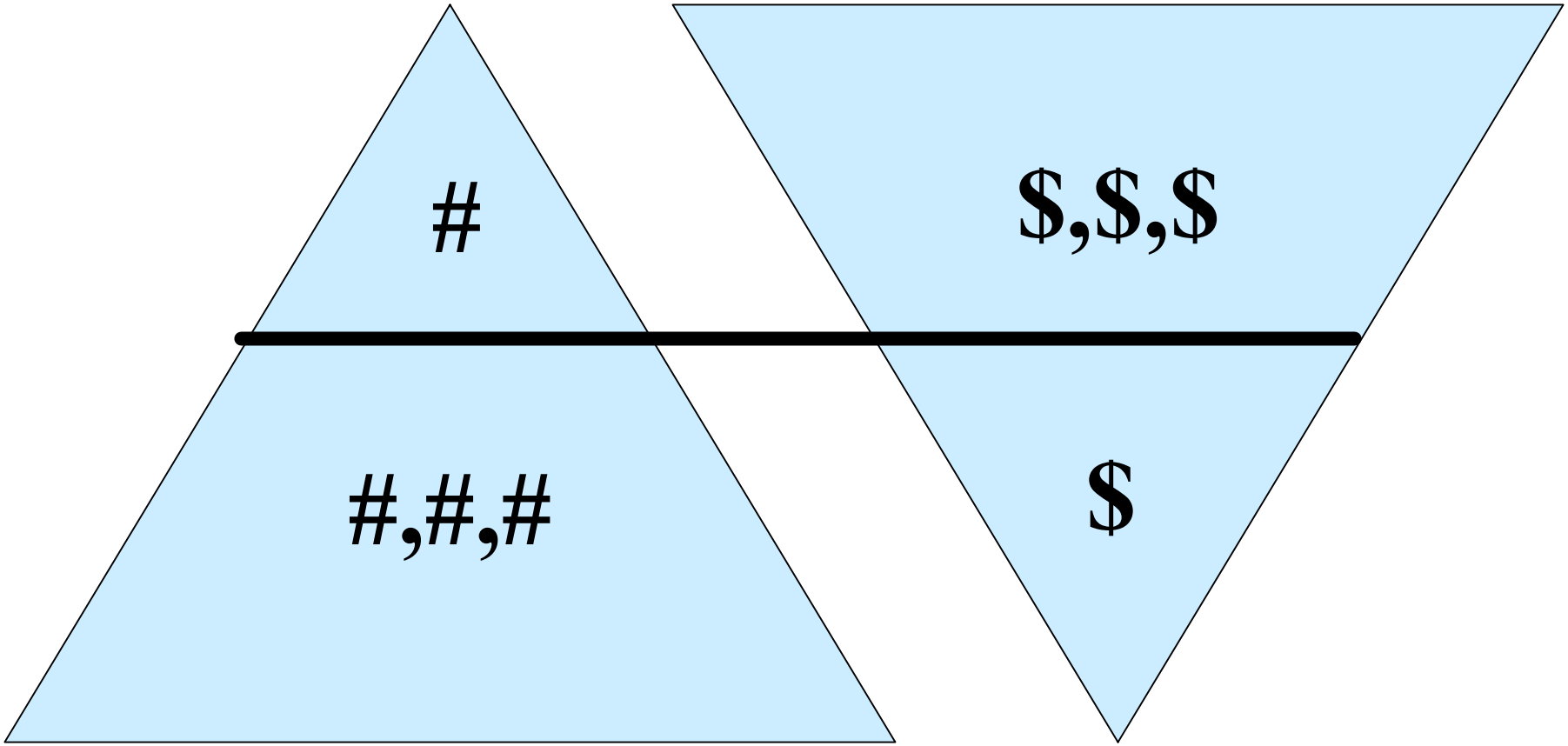
MAJOR SUBJECT AREAS

I. **Capital Assets** – includes Space Exploration Equipment and Major Systems
   A. Management Tools
   B. Management Plans

II. **Acquisition** - includes Service Contracts and Capital Asset Acquisitions
   A. Statement of Work
   B. Waiver

III. **Center Pollution Prevention Program**
   A. “Plan-Do-Check-Act” Process
   B. Outreach Programs

Difference Between Capital Assets and Consumable Commercial Products



Number of: Items, Contracts, Contractors

Dollar Amount per: Item, Contract, Contractor

A) Capital Assets are:

1) land, structures, equipment, and intellectual property, including software,
2) That are used by the Federal Government
3) And have an estimated useful life of two years or more.

B) Capital Assets exclude:

1) Items acquired for resale in the ordinary course of operations
2) Or held for the purpose of physical consumption such as operating materials and supplies.

Examples of ***capital assets include*** the following, but are not limited to them:

•Office buildings, hospitals, ***laboratories***, schools, and prisons;

•Dams, power plants, and water resources projects;

•Furniture, elevators, and printing presses;

•Motor vehicles, ***airplanes***, and ships;

•***Satellites*** and ***space exploration equipment***;

•Information technology hardware, software and modifications;

•Department of Defense (DOD) weapons systems; and

•Environmental restoration (decontamination and decommissioning efforts).

CAPITAL ASSETS: MOON AND MARS

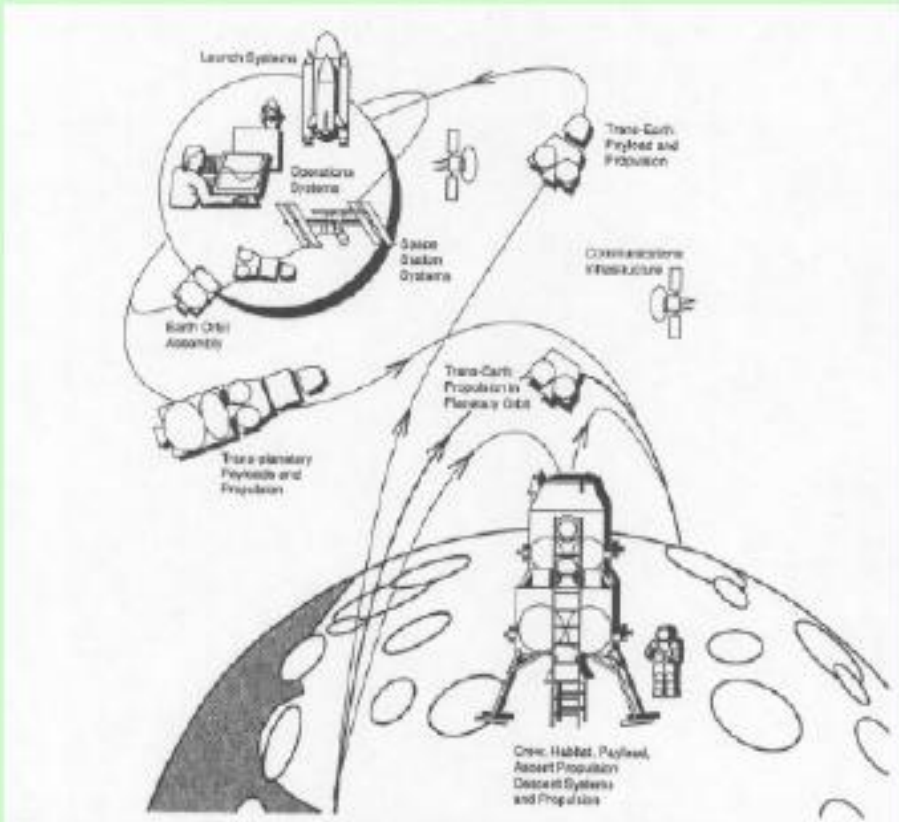


Fig. 1-6. **Example Mission Concept and Architecture for a Lunar Mission.** Diagrams such as this one are very useful in communicating the overall mission concept. We will provide details of this concept throughout the book.

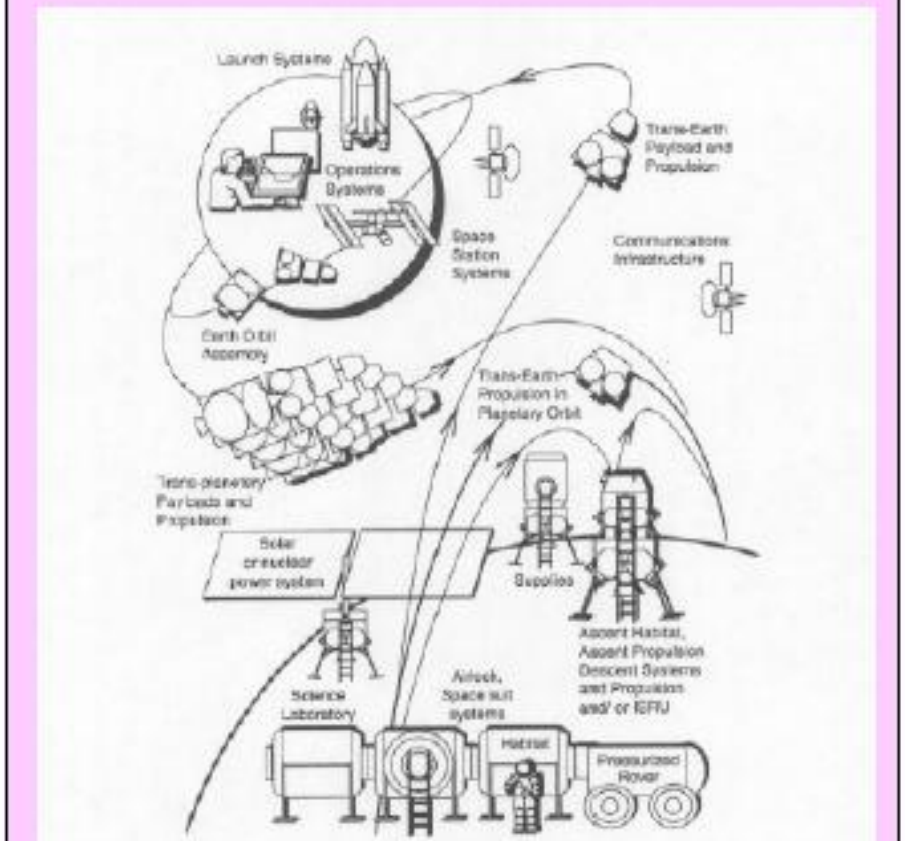


Fig. 1-6. **Mission Concept and Architecture for a Mars Mission.** Chapter 31 details this concept.

From W. J. Larson & L. K. Pranke (1999) Human Spaceflight: Mission Analysis and Design

NPR 7120.5C "NASA Program & Project Management Processes & Requirements"

NASA's Four Investment Areas or Product Lines:

- Basic and Applied Research Portfolio
- Advanced Technology Development Project
- Flight Systems & Ground Support Project
- Institution Project

PROJECT LIFE CYCLE																
Product Lines	**FORMULATION**						**IMPLEMENTATION**									
Basic & Applied Research Portfolio	Prepare Portfolio Process		Approve Process		Solicit, Receive, Evaluate Proposals	Recommend Proposals for Selection	Initiate Funding for Investigations		Monitor Performance for Investigations		Update Portfolio		Communicate Results		Monitor Performance Metrics	
Advanced Technology Development Project	Concept Studies		Systems Portfolio Analysis				TRL Maturation and/ or			KPP Enhancement			***Outcomes:*** ***Tech Transfer*** ***Tech Demo*** ***Tech Feasibility***			
Flight Systems & Ground Support Project	Pre-Phase A: Concept Studies		Phase A: Concept Development		Phase B: Preliminary Design		Phase C: Final Design		Phase D: Fabrication, Assembly & Test		Phase E: Operations & Sustainment		Phase F: Disposal			
Institutional: Capital Asset Project	Pre-Formulation & Proposal			Preliminary Design & Analysis			Build, Construct, Fabricate				Operations & Maintenance		Asset Disposal			
Institutional: Non-Capital Asset Project	Pre-Formulation & Proposal			Preliminary Design & Analysis			Execute Project Plan									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

I. Capital Assets – includes Space Exploration Equipment and Major Systems

A. Management Tools

1. Life Cycle Cost – list of specific "environmental costs"

a. Capital Costs

b. Operating Costs

c. Disposal Costs – environmental liability

2. Continuous Risk Management – "environmental risks" to be managed

a. Environmental impacts (incl. socio-economic impacts)

b. Environmental permits (incl. industrial pretreatment agreements)

c. Hazardous wastes & hazardous materials

d Unregulated emerging contaminates

3. Value Engineering – "environmental and energy conservation objectives"

a. Government value engineering study

b. Contractor value engineering study

I. Capital Assets – including Space Exploration Equipment and Major Systems

B. Management Plans: incorporates "Plan-Do-Check-Act" process

1. **Environmental Plan**
    a. Environmental impact mitigation plan
    b. See requirements in NPR 7120.5C
2. **Acquisition Plan** – "other considerations" includes
    a. Reduce resource utilization
    b. Reduce ecosystem degradation
    c. Ensure safety and health
3. **Capital Asset Disposal Plan**
    a. Environmental impacts
    b. Cost estimate and required resources

ENVIRONMENTALLY RELATED ACQUISITON REQUIREMENTS		
CATEGORY OF REQUIREMENT AND NAME	**DESCRIPTION AND SCOPE**	**REFERENCE CITATION**
General Requirements:		
•Federal Acquisition Requirements (FAR)	FAR Part 23 – Environment, Energy and Water Efficiency Technologies, Occupational Safety, and Drug-Free Workplace	FAR Part 23
•NASA FAR Supplement (NSF)	NFS Part 1823 Environment, Energy and Water Efficiency, Renewable Energy Technologies, Occupational, Safety, and Drug-Free Workplace	NSF Part 1823
•NASA Procurement Information Circular (PIC)	Applicability of Affirmative Procurement	PIC 01-27
Special Requirements for Commercially Available Goods & Products:		
•Affirmative Procurement	Affirmative Procurement Program and Plan for Environmentally Preferable Products	NPR 8530.1A
•Environmentally Preferred Products	Affirmative Procurement Program and Plan for Environmentally Preferable Products	NPR 8530.1A
Special Requirements for Facilities, Buildings and Fixtures to Real Property	Sustainable Facilities Design	NPD 8820.3
Special Requirements for Service Contracts and Capital Assets (includes Major Systems and Space Exploration Equipment) Acquisition	Service Contracts and Capital Assets Acquisition	This document

II. Acquisition - includes Service Contracts and Capital Asset Acquisitions

A. Statement of Work (from EO 13101, Section 401)

Acquisition Planning. Program and acquisition managers shall take an active role in:

1) Developing plans, drawings, work statements, specifications, or other product descriptions, which considers factors including:

a) Reduce resource utilization (e.g., increase use of bio–based products and recovered materials, reuse of product, eliminate virgin material requirements);

b) Reduce ecosystem degradation (e.g., reuse of product, recyclability, use of environmentally preferable products, waste prevention, ultimate disposal);

c) Ensure safety and human health (e.g., toxicity reduction or elimination).

2) Using these factors in acquisition planning for all procurement and in the evaluation and award of contracts.

B. Waiver (based on NPR 7120.5C project categorization schema)

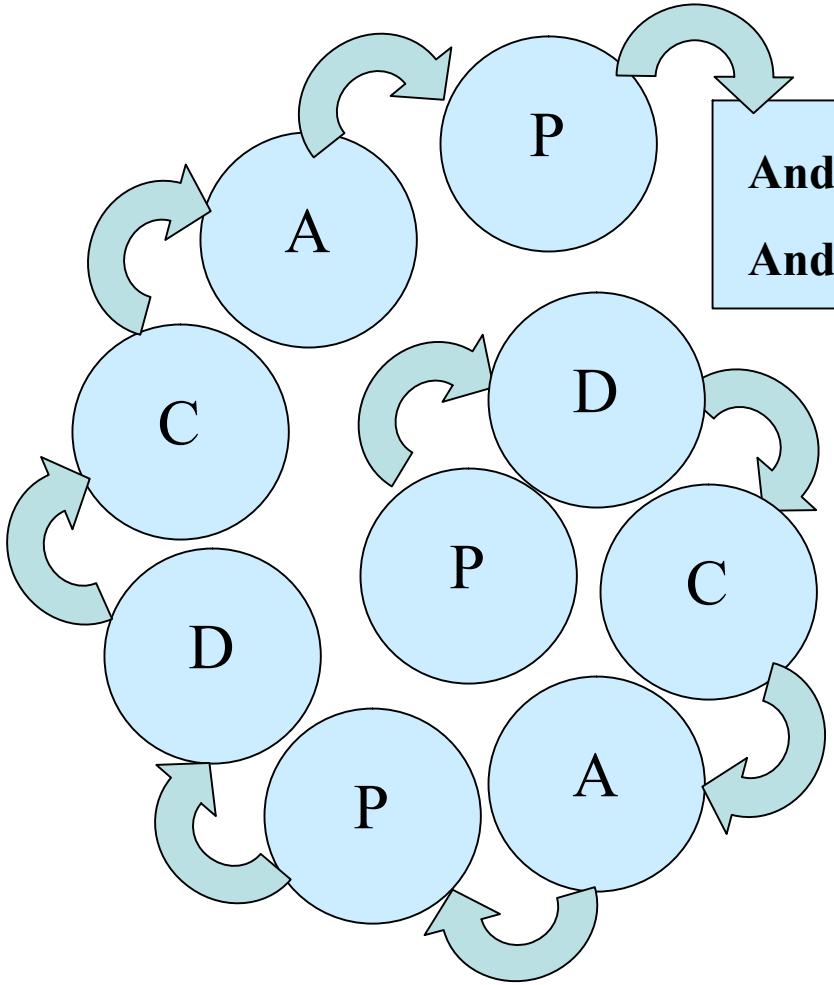
"PLAN-DO-CHECK-ACT" PROCESS

P = Plan

D = Do

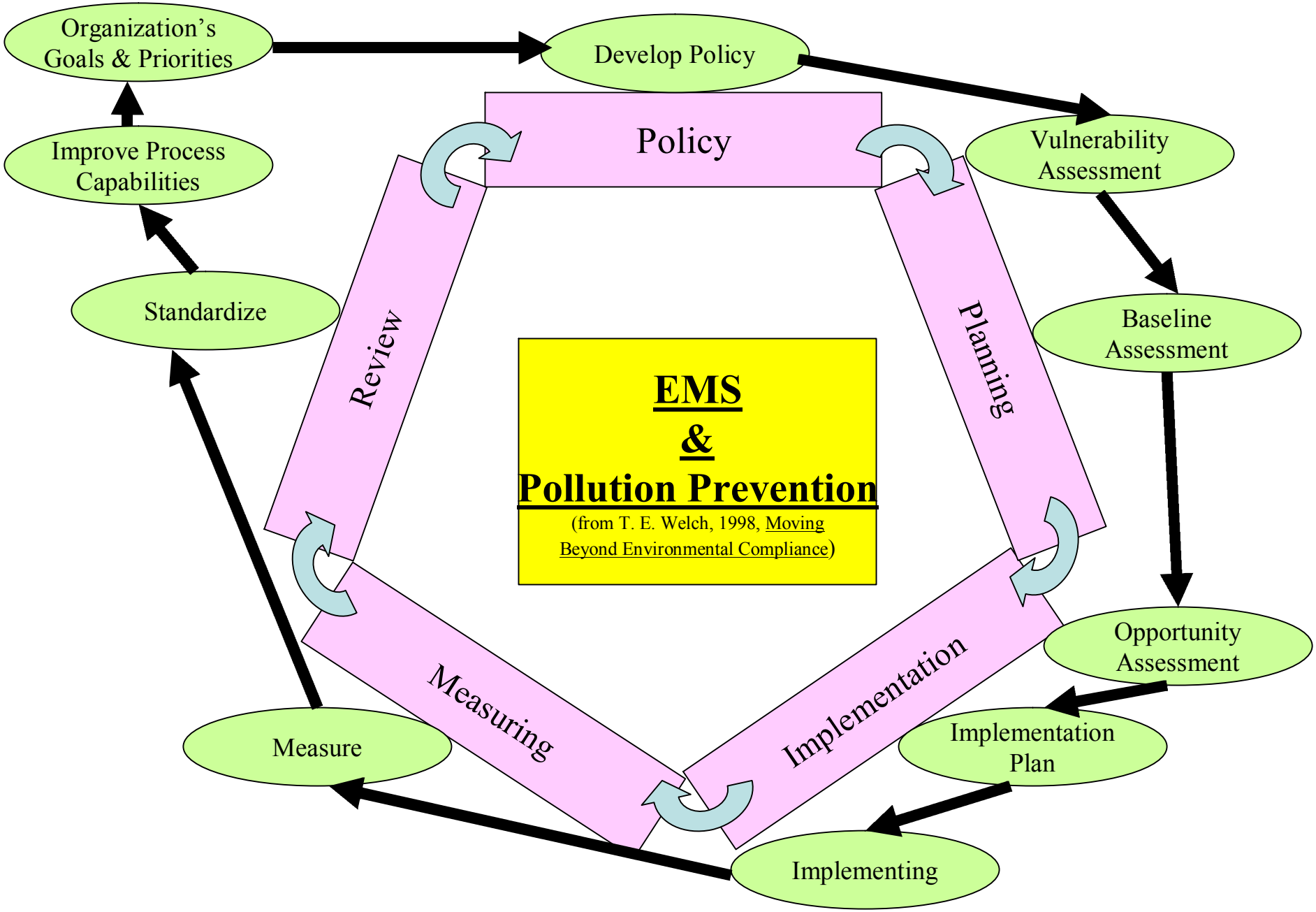
C = Check

A = Act

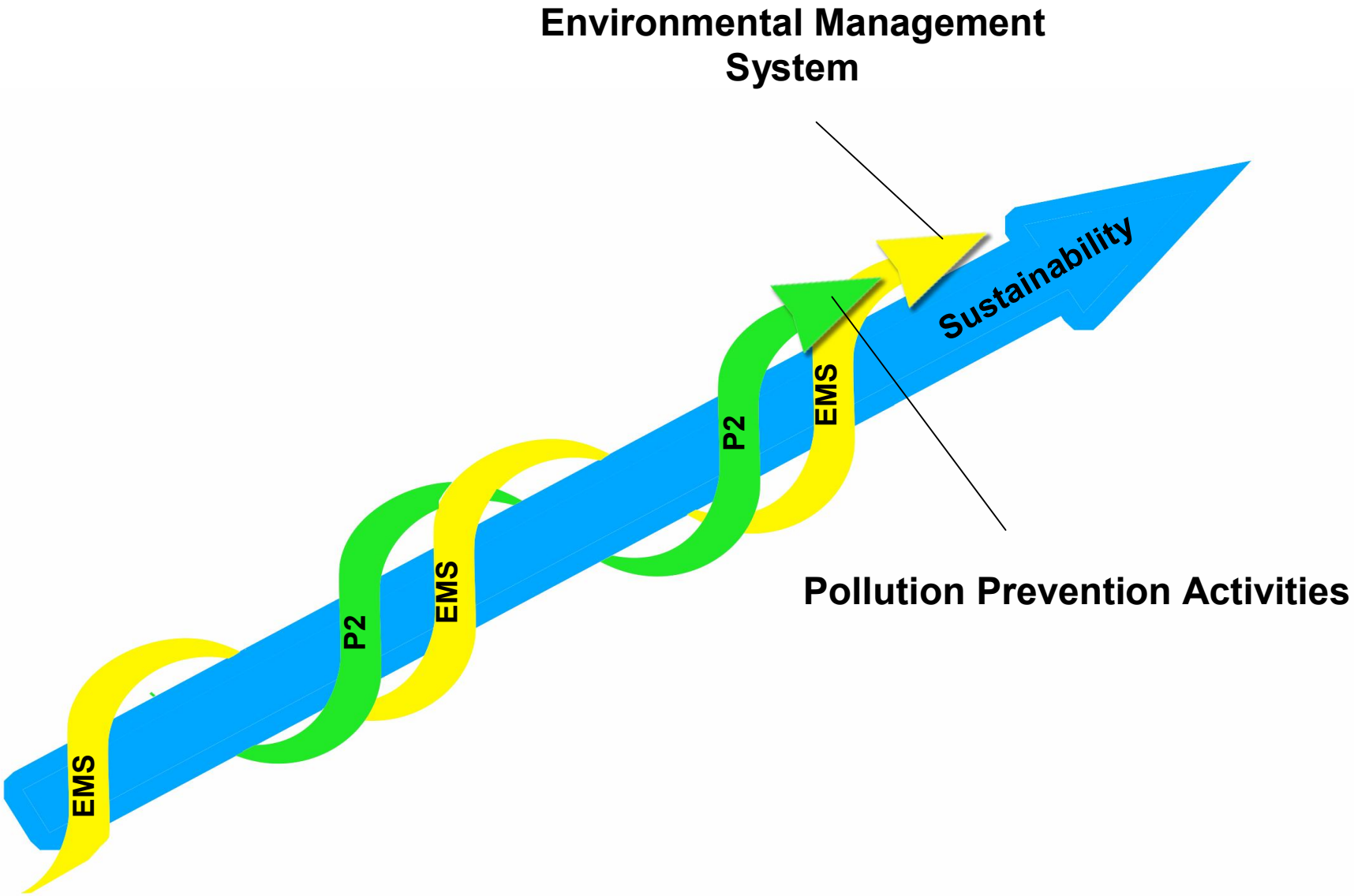


And so on,

And so on ….


Organization's Goals & Priorities
Develop Policy
Policy
Vulnerability Assessment
Baseline Assessment
Opportunity Assessment
Implementation Plan
Implementing
Measure
Standardize
Improve Process Capabilities
Review
Planning
Measuring
Implementation
EMS & Pollution Prevention
(from T. E. Welch, 1998, Moving Beyond Environmental Compliance)

SUSTAINABILITY, POLLUTION PREVENTION, AND ENVIRONMENTAL MANAGEMENT SYSTEMS



III. Center Pollution Prevention Program

A. "Plan-Do-Check-Act" Process

1. Plan: Written pollution prevention plan or compilation of plans
2. Do: Within allowable resources, execute the plan
3. Check: Monitor and track progress
4. Act: Periodic review and revise the plan

B. Outreach Programs

1. Community outreach program
2. NASA "mission-related project" outreach program

STOP!

MENTAL MODELS

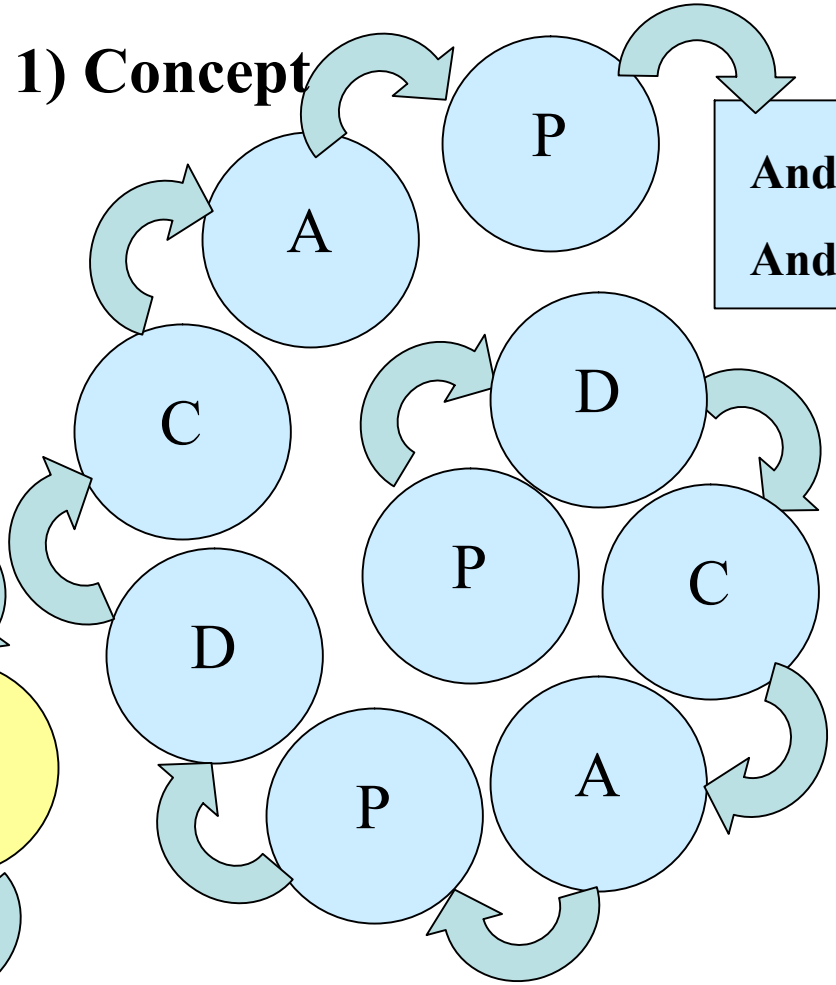
P = Plan

D = Do

C = Check

A = Act

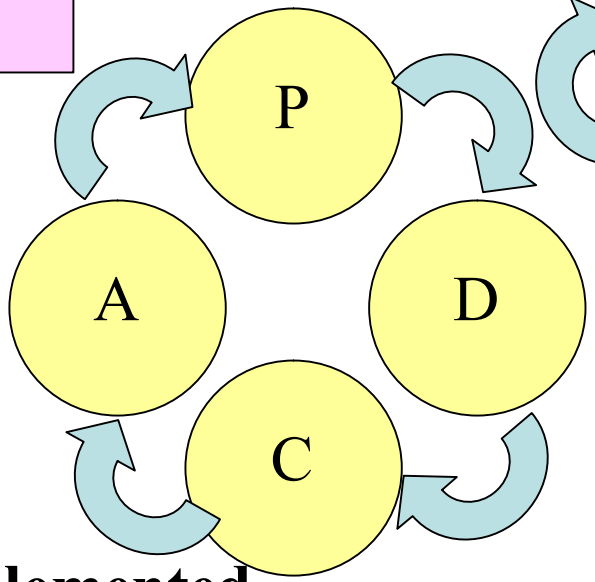
1) Concept



And so on,

And so on ….

2) Printed



3) Implemented